Lawrence Livermore National Laboratory

The Regents Oversight Committee
University of California

by

C. Bruce Tarter
Director

Livermore, CA
June 12, 2002

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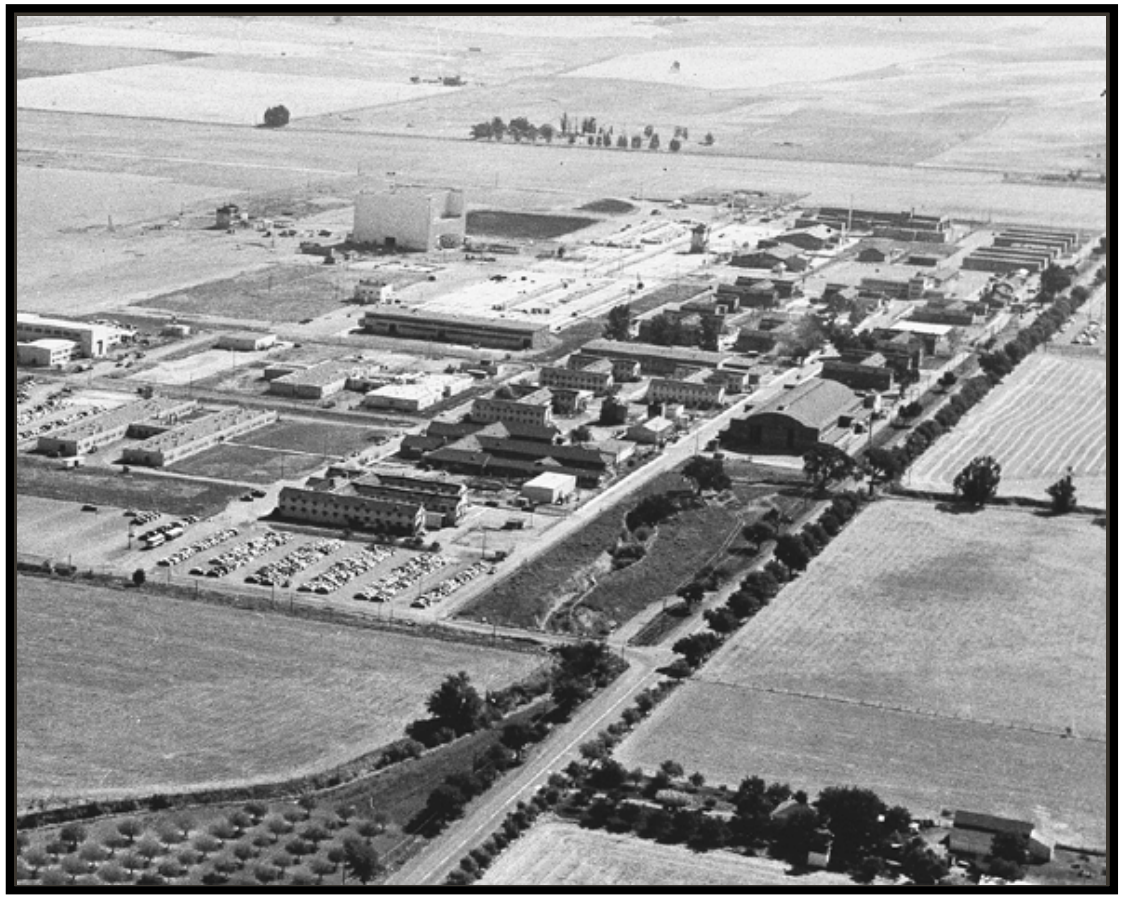
UCRL-PRES-148768

Livermore branch of the University of California Radiation Laboratory



In 1952 - 1953

- **123 employees**
- **Annual budget ~ $3.5 million**
- **1.2 square mile main site**

Created to meet an urgent national security need by helping to advance nuclear weapons science and technology

Three physicists organized and shaped the direction of this new laboratory

Ernest O. Lawrence provided the guiding philosophy for LLNL

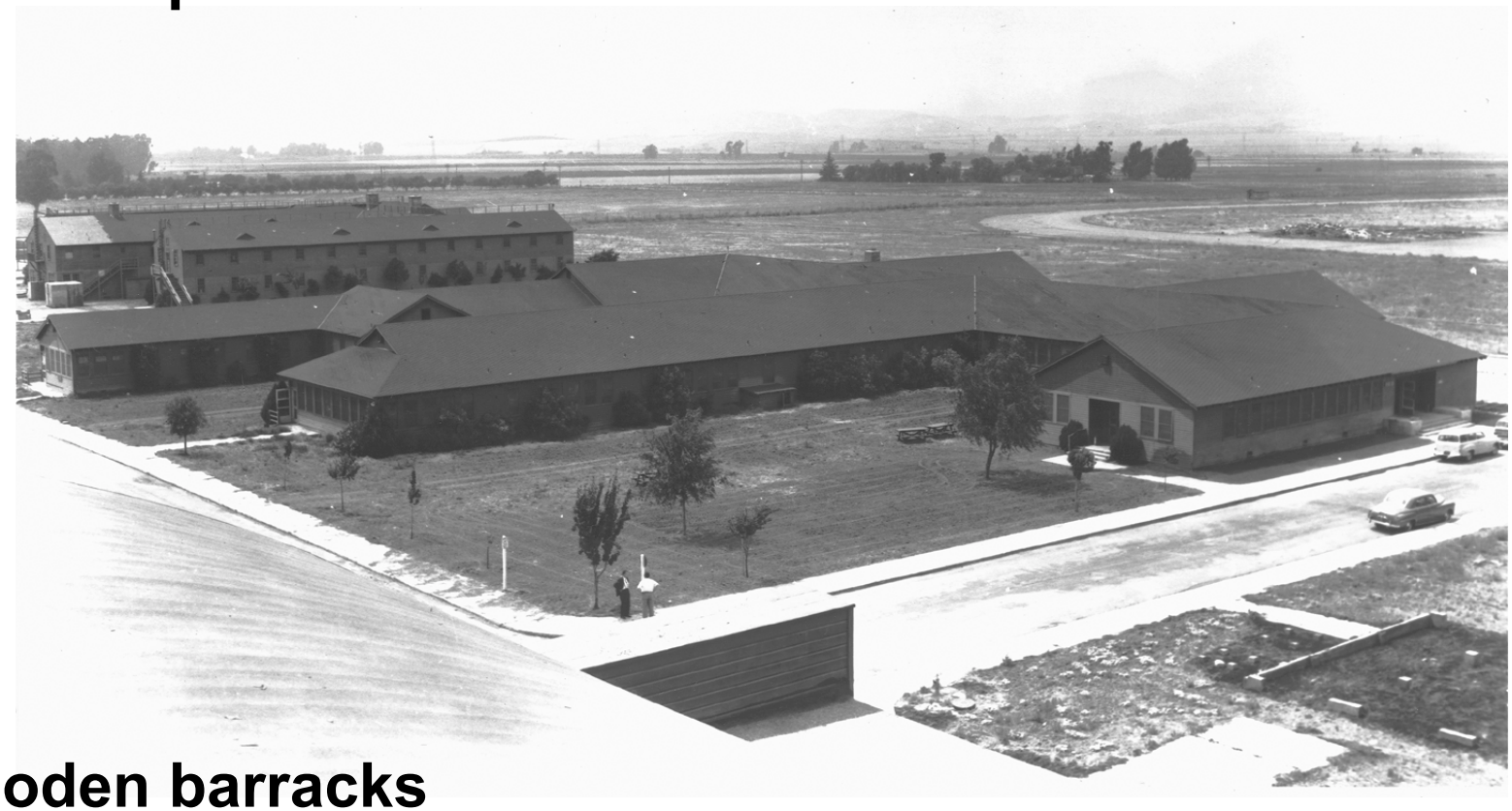
Ernest O. Lawrence (1901–1958)

- Emphasized a team approach to big science
- Merged basic research with practical engineering
- Pushed innovation at all levels

The first Livermore staff faced challenges

No post office box

Not enough telephones

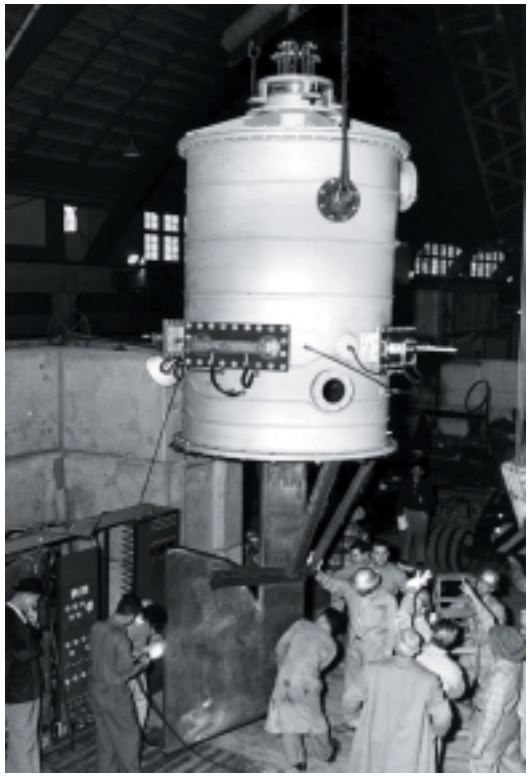


Wooden barracks buildings (some still in use)

Not enough desk lamps

1950s

1950s: LLNL designed megaton-class warheads launchable from submarines and later, better designs

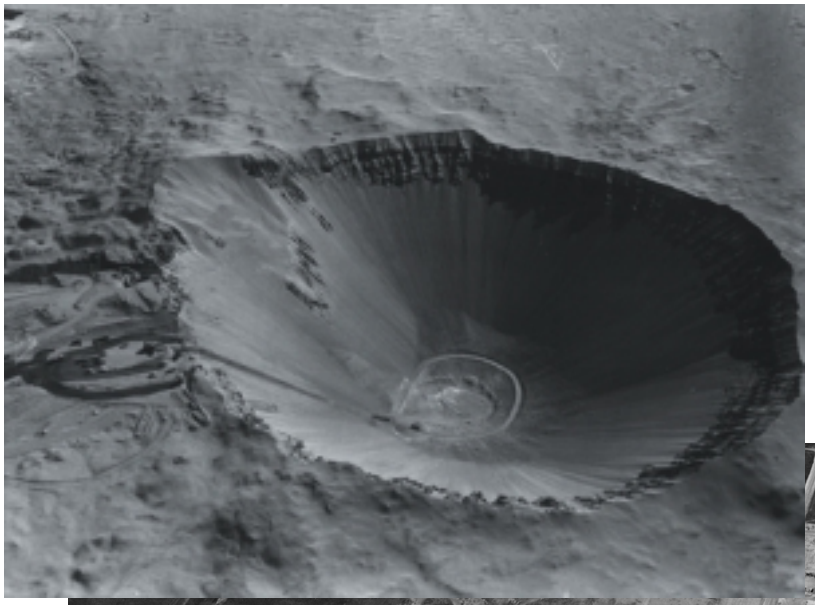


90-inch cyclotron

Polaris

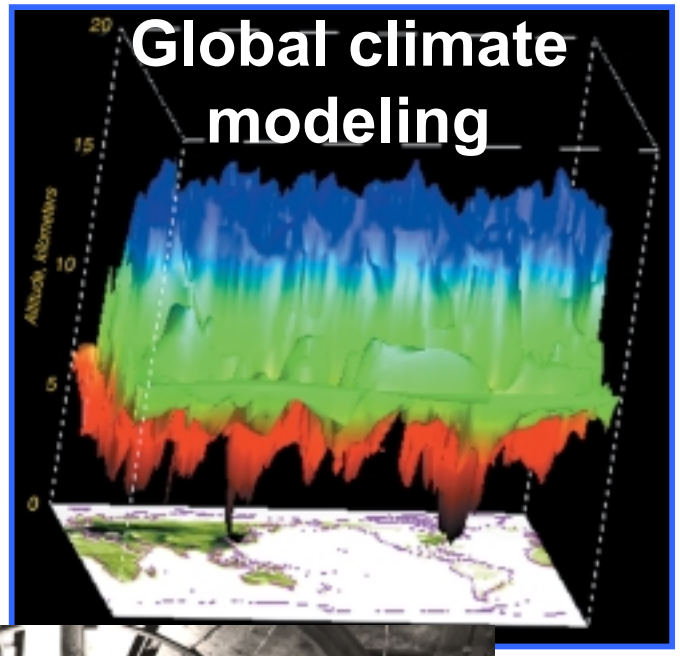
Ruth tower
at NTS, 1953

1960s



1960s: Bioscience and environmental programs

Marshall Islands
Fallout Research

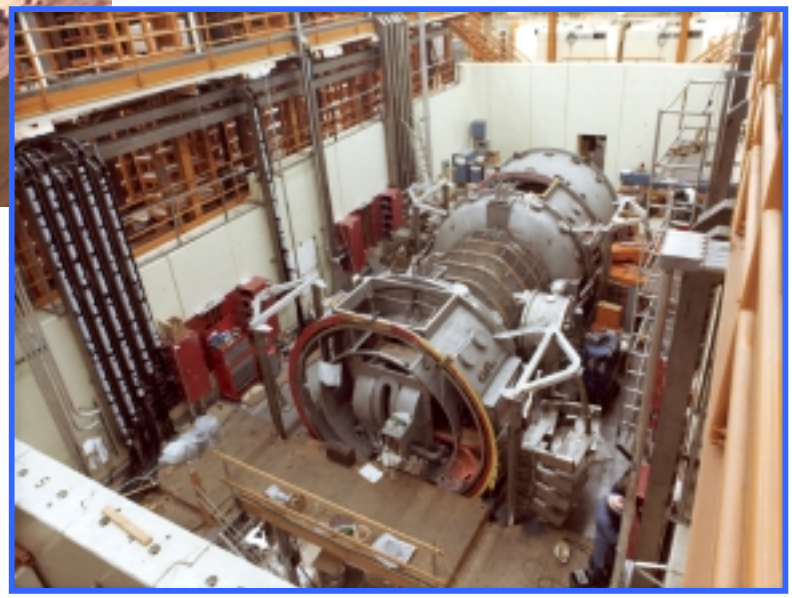


Underground
Testing

1970s

Flow Separator

Coal Gasification



Tandem Mirror Experiment

1970s: Laser program starts and develops the world's largest lasers

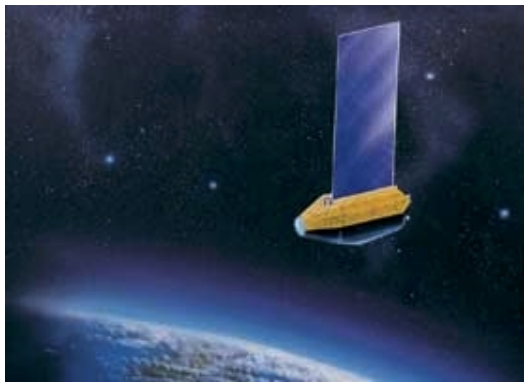
National Ignition Facility

Under construction today

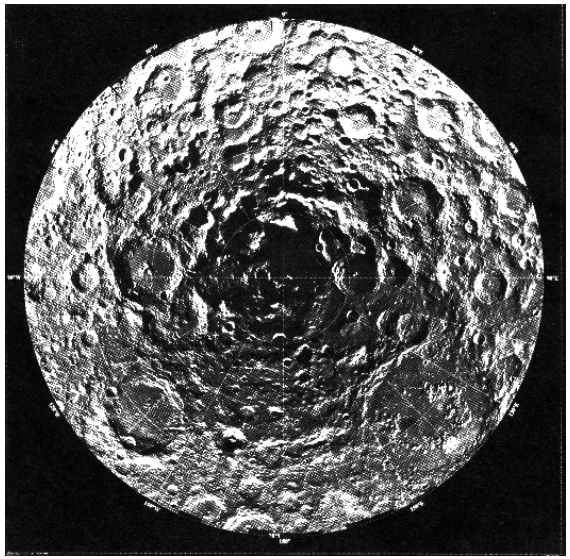
Nova (1980s)

Shiva (1978)

1980s



Brilliant Pebbles



Clementine

Preparation for an underground test

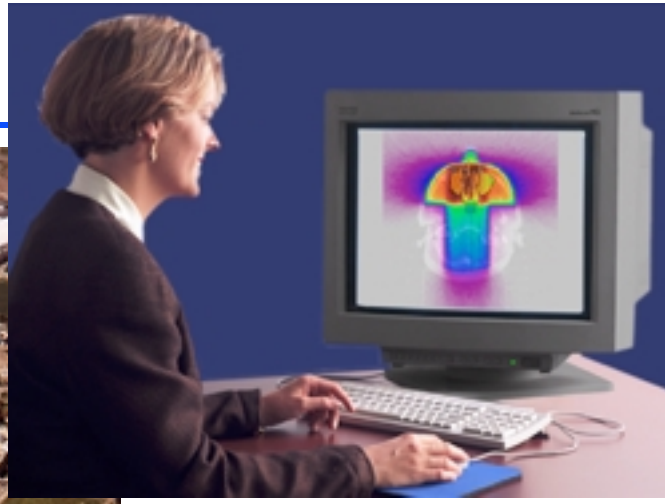
1980s: Exploration of massively parallel processing has led to unprecedented simulation capabilities

100000000
10000000
1000000
100000
10000
1000
100
MegaFlops
10
0.001

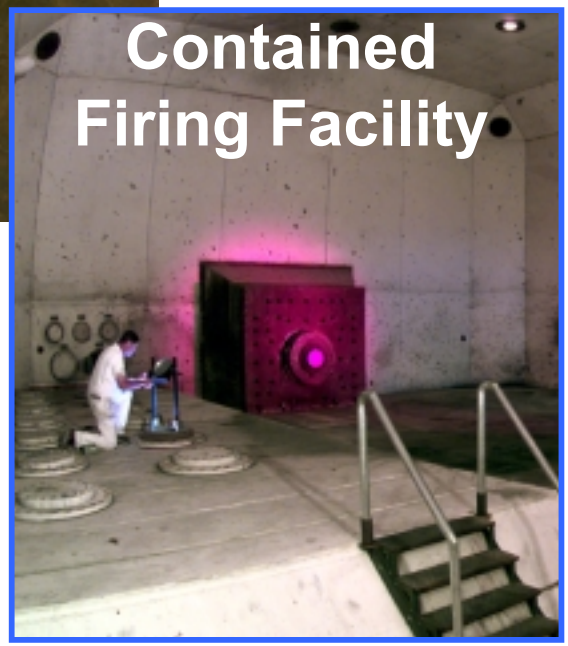
1952
1962
1972
1982
1992
2002

You are here
ASCI
CRAY YMP
Macintosh G4
CRAY 1
CDC 7600
Pentium PC
CDC 3600
Apple 1
IBM PC
DEC PDP8
Univac

1990s



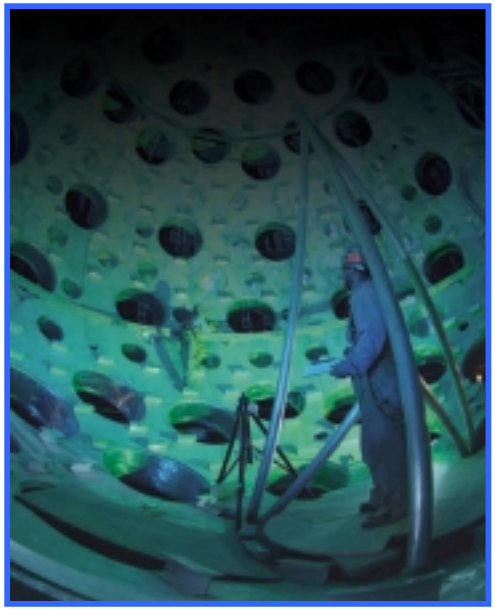
PEREGRINE



1990s: LLNL's major thrusts became Stockpile Stewardship and nonproliferation (counter-terrorism) programs

Advanced Simulation and Computing (ASCI)

National Ignition Facility



Portable bio-detectors

Iraq inspections

2000s: A multi-disciplined national laboratory

Dedicated to ensure national security and apply science and technology to the important problems of our time

- **8300 employees**
- **Annual budget ~ $1.5 billion**
- **1.2 square mile main site**
- **Experimental test site near Tracy**

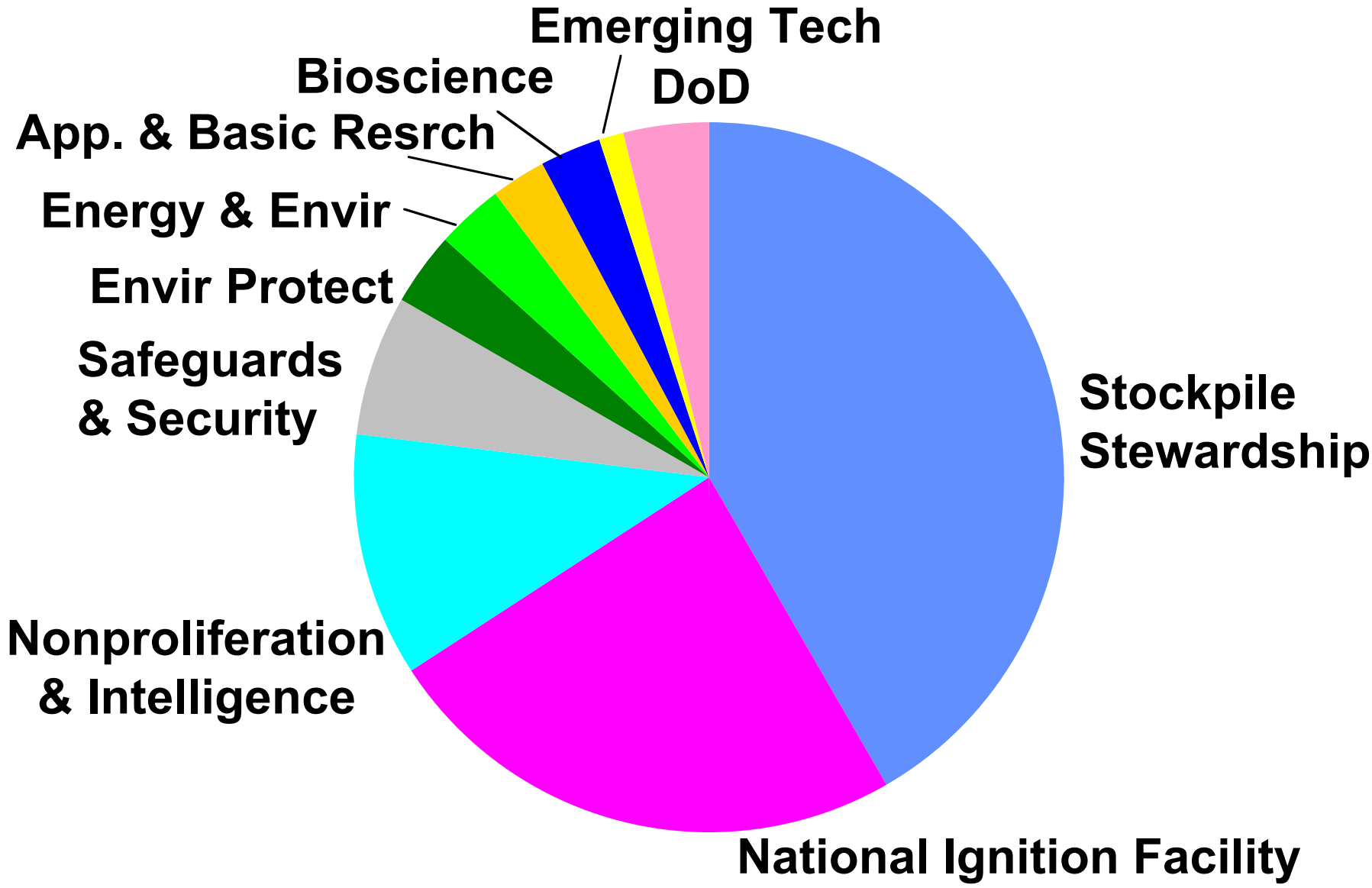
LLNL Mission Statement

Short form: **Ensure national security and apply science and technology to the important problems of our time**

Full form:

- **Lawrence Livermore National Laboratory is a premier applied-science national security laboratory.**
- **Our primary mission is to ensure that the nation's nuclear weapons remain safe, secure, and reliable and to prevent the spread and use of nuclear weapons worldwide.**
- **This mission enables our programs in advanced defense technologies, energy, environment, biosciences, and basic science to apply Livermore's unique capabilities, and to enhance the competencies needed for our national security mission.**
- **The Laboratory serves as a resource to U.S. government and a partner with industry and academia.**

FY 2002 Budget = $1.51 Billion



LLNL Organization

Director
C. Bruce Tarter

Deputy Director Science & Technology Jeffrey Wadsworth	Laboratory Executive Officer Ronald W. Cochran	Deputy Director Strategic Operations Michael R. Anastasio

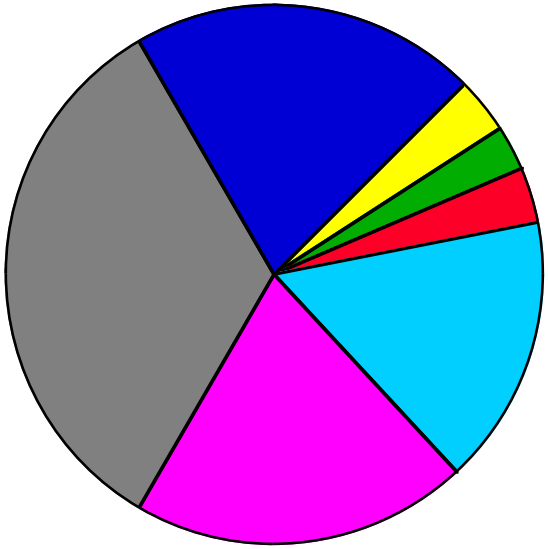
Defense & Nuclear Technologies Bruce T. Goodwin	National Ignition Facility Programs George H. Miller	Nonproliferation, Arms Control, & International Security Wayne J. Shotts
Energy & Environment C. K. Chou	Physics & Advanced Technologies William H. Goldstein	Biology & Biotechnology Research Berthold W. Weinstein *
Chemistry & Materials Science Harold C. Graboske, Jr.	Engineering Glenn L. Mara	Computation Dona L. Crawford
Safety, Security, & Environmental Protection Dennis K. Fisher	Administration Janet G. Tulk	Laboratory Services J. Steve Hunt

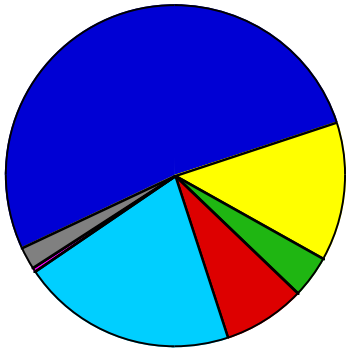
* Acting

LLNL staff profile by education level

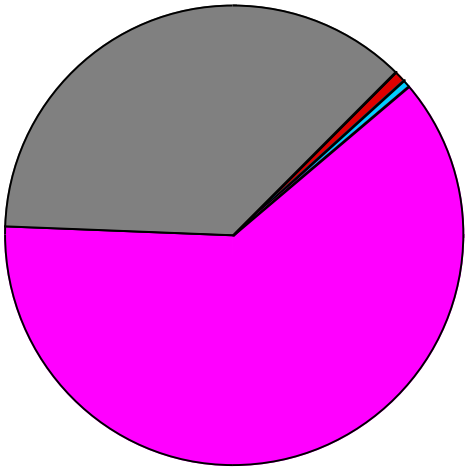
Full Time Staff = 6842

3145
Engr/MS/BS/AA





1253
PhD



2444
No advanced degree

- **Physicists**
- **Chemists & Materials Scientists**
- **Biotechnology & Environmental Scientists**
- **Mathematicians/Computer Scientists**
- **Engineers**
- **Technical & Crafts**
- **Administrative & Clerical**

Livermore employees make a difference in the communities in which they live

LLNL Achievements during the past year

- Sixth Annual Certification process completed
- Certification of the W87 LEP
- NIF meeting all milestones on its new redefined baseline
- ASCI White installed and running problems for all Labs at 12 Tf
- Contained Firing Facility completed
- Groundbreaking for Terascale Simulation Facility and the International Security Research Facility
- EUVL prototype machine for making the next generation computer chips
- LLNL scientists create a virtual star over Hawaii for Keck, the world's largest telescope using adaptive optics

Terascale Simulation and the International Security Research Facilities

International Security Research Facility

Terascale Simulation Facility

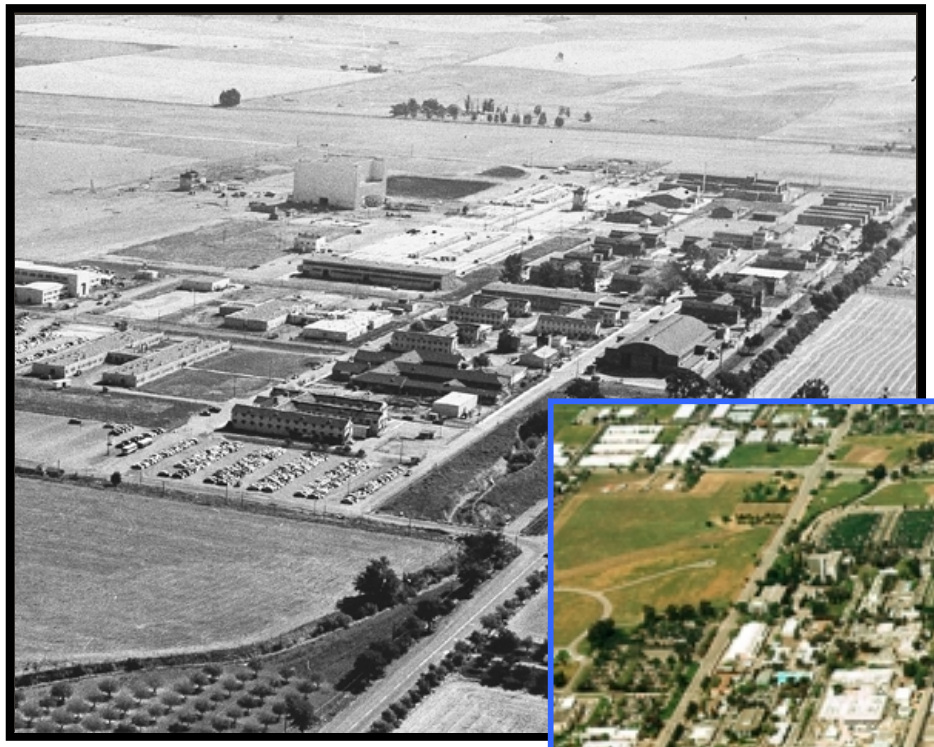
LLNL's 50th Anniversary, September 2, 2002

Lawrence Livermore
National Laboratory

Making History
Making a Difference

1952-2002

50 Years



Making history

Making a difference

1952

2002

Preparing for the next fifty years